

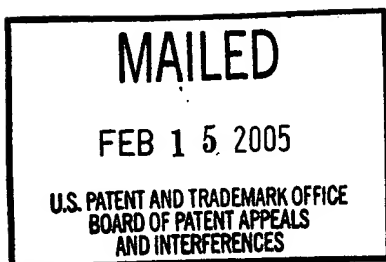
The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DALE C. FLANDERS  
and  
PETER S. WHITNEY

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Appeal No. 2005-0177  
Application No. 09/645,827

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ON BRIEF

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Before WARREN, OWENS, and TIMM, *Administrative Patent Judges*.  
TIMM, *Administrative Patent Judge*.

***DECISION ON APPEAL***

This appeal involves claims 1-8 and 17-20. Claims 9-16, the only other claims pending in the application, stand withdrawn from consideration. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 134.

### ***INTRODUCTION***

Claims 1-8 and 17-20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Wolfgang Andreasch et al., *Flexible Automated Assembly of Micro-optical Elements (Optical SMD)*, Microrobotics: Components and Applications, Proc. SPIE Vol. 2906, Dec. 1996, at 162 (Wolfgang).<sup>1</sup>

Appellants state that “[c]laims 1-8 and 17-20 stand or fall independently of each other.” (Brief, p. 3). To the extent that the claims are argued separately we consider them separately.

We affirm substantially for the reasons articulated in the Answer and add the following primarily for emphasis.

### ***OPINION***

All of the claims are directed to an apparatus, namely, an optical system production line.

Claim 1 is illustrative:

1. An optical system production line, comprising  
an optical bench supply that provides optical benches;  
a component supply that provides optical components;  
a pick-and-place machine that receives optical benches from the bench supply,  
picks optical components from the optical component supply, and  
attaches the optical components to the optical benches, and  
optical system aligner that characterizes the positions of the optical  
components, which have been attached to the optical benches, and  
mechanically adjusts the relative positions of the optical components.

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<sup>1</sup>As both Appellants and the Examiner refer to this article by the name Wolfgang, we will do the same.

There is no dispute here that Wolfgang describes an optical bench supply, component supply, and a pick and place machine as required by claim 1 (Compare Brief, pp. 3-4 with Answer, p. 4). Appellants' sole argument with regard to claim 1 is that Wolfgang does not describe a system that includes the claimed optical system aligner providing the function of adjusting the mechanical components that have been attached to the optical bench (Brief, p. 3). The key phrase here being "which have been attached." This is because, in the process of Wolfgang, the optical component is bonded to the optical bench at a different time than in the process of Appellants. Wolfgang bonds the component after the optical alignment step whereas Appellants bond the component beforehand.

"[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb, Inc.*, 909 F.2d 1464, 1468, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Therefore, the patentability of an apparatus claim depends on the claimed structure, not on the use or purpose of that structure, *Catalina Marketing Int'l Inc. v. Coolsavings.com Inc.*, 289 F.3d 801, 809, 62 USPQ2d 1781, 1785 (Fed. Cir. 2002), or the function or result of that structure. *In re Danly*, 263 F.2d 844, 848, 120 USPQ 528, 531 (CCPA 1959); *In re Gardiner*, 171 F.2d 313, 315-16, 80 USPQ 99, 101 (CCPA 1948). If the prior art structure possesses all the claimed characteristics including the capability of performing the claimed function, then there is a *prima facie* case of unpatentability. *In re Ludtke*, 441 F.2d 660, 663-64, 169 USPQ 563, 566-67 (CCPA 1971).

Appellants have not convinced us that there is a structural difference between the apparatus of claim 1 and that of Wolfgang. Just as Appellants' alignment system has an optical detector for characterizing the position of the optical components so has the alignment system of Wolfgang (collimated laser beam and optical sensing system: Wolfgang, ¶ 5.2, ll. 4-5). Just as Appellants' alignment system has a pair of grippers for mechanically adjusting the relative positions of the optical components so has the alignment system of Wolfgang (miniature pneumatic gripper shown in Fig. 8a, Wolfgang, ¶ 5.2, ll. 1-2). We also find that the optical system aligner of Wolfgang is capable of characterizing the positions of the optical components after attachment as claimed. Such characterization of the positions after attachment merely requires the detector be switched on after the attachment step. The "difference" argued by Appellants is merely a difference in timing, it is not a difference in the structure of the apparatus.

With respect to claim 17, Appellants note that this claim requires "means for characterizing the positions of the optical components attached to the optical benches, and for mechanically adjusting the relative positions of the optical components attached to the benches." Appellants argue that no *prima facie* equivalency exists between this element and the system disclosed in the Wolfgang article (Brief, p. 4).

Stepping back for a moment, we must first consider the nature of this claim. Again, claim 17 is directed to an apparatus. Because the limitation at issue is expressed in "means plus function" language and because the claim does not recite any definite structure in support of the recited function, the limitation is subject to the requirements of 35 U.S.C. § 112, ¶ 6.

*B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424, 43 USPQ2d 1896, 1899 (Fed. Cir. 1997). In accordance with § 112, ¶ 6, we must look to the specification and construe the “means” language as limited to the corresponding structure disclosed in the specification and equivalents thereof. *In re Donaldson Co.*, 16 F.3d 1189, 1195, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994)(*en banc*). The primary concern is the interpretation of “means” within the claim. The function recited in the claim serves as tool in the identification of the structure representing the “means.”

Looking to the specification, we find a discussion of an alignment system on pages 25 and 26 which appears to have structures corresponding to the claimed means for characterizing and mechanically adjusting. Mechanical adjustment occurs via jaws which grasp the handle of an alignment structure which holds the optical component and characterization occurs via a detector which detects an optical signal (specification, pp. 25-26). Figure 26, which is said to “schematically illustrate” the manufacturing sequence (specification, p. 24, ll. 26-27), depicts jaws 710a and 710b holding the optical component F within the alignment structure 100 and a detector 2024 which detects optical signal 2022. The words “schematically illustrates the manufacturing sequence” indicate that Appellants do not intend that the claimed structure be limited to the specific shapes and positions of the structures of Figure 26. The Figure merely provides an example of the procession of the manufacturing steps. We find that the

corresponding structures disclosed in the specification are jaws which grasp and a detector that detects an optical signal.<sup>2</sup>

It is with the above discussed corresponding structure in mind that we make a comparison to the prior art in determining anticipation. The apparatus of Wolfgang has jaws within the gripper shown in Figure 8.a. The apparatus of Wolfgang also contains a detector which detects a laser beam for on-line alignment (Wolfgang, ¶ 5.2-5.3). We find that the structure of Wolfgang is the same as the corresponding structure described in the specification.

If the structure is the same, there is no issue with regard to equivalency. That being said, we also agree with the Examiner that the structure of Wolfgang is equivalent to the corresponding structure of the claim (Answer, pp. 7-11). It is often said that in order to be equivalent, a structure must perform the identical function, in substantially the same way, with substantially the same result. *Odetics, Inc. v. Storage Technology Corp.*, 185 F.3d 1259, 1267, 51 USPQ2d 1225, 1229-30 (Fed. Cir. 1999); *IMS Technology Inc. v. Haas Automation Inc.*, 206 F.3d 1422, 1435, 54 USPQ2d 1129, 1138 (Fed. Cir. 2000); *Kemco Sales Inc. v. Control Papers Co.*, 208 F.3d 1352, 1361, 54 USPQ2d 1308, 1315 (Fed. Cir. 2000). Appellants argue that the Examiner has admitted that the function is not identical as required by this test (Reply Brief, p. 3). We find no such admission by the Examiner. Appellants have reproduced in the Reply Brief

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<sup>2</sup>We also note that structure “unrelated to the recited function” disclosed in the specification is not to be read into the claim as limiting the scope of the means clause. *See Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1308-09, 46 USPQ2d 1752, 1756 (Fed. Cir. 1998).

a portion of the Examiner's reasoning which relates to the "way" prong of the test (Reply Brief, pp. 2-5). In addition to finding that the "way" of Wolfgang is substantially the same (Answer, p. 8, ll. 16-19 and p. 10, ll. 5-8), the Examiner also found that "the prior art performs the *same function* as Appellants' invention" (Answer, p. 8, ll. 2-6 and p. 9, ll. 16-19, emphasis added). The Examiner further finds that the system of Wolfgang "produces *substantially the same result*" (Answer, p. 9, ll. 3-6 and p. 10, ll. 12-14, emphasis added). The Examiner supported those findings with evidence (Answer, pp. 8-11) and Appellants have not convinced us of any reversible error in either the factual findings or the application of the law.

The identical function, substantially the same way, substantially the same result test can sometimes cloud the issue of equivalency in a case such as the one before us, particularly, if the language of the claim is read so as to divorce it from reality. In this case, a comparison of the structures of the specification and the prior art points to equivalency: Each system has jaws for grasping and a detector for detecting an optical signal. The jaws serve the function of adjusting the position of the optical component while the position of the optical component is being characterized by the detector. While the claim includes the language "attached to the optical benches," this language does not somehow transform the underlying structure corresponding to the "means" to one so different from that of Wolfgang such that there is no equivalency.

With regard to claims 2 and 18, Appellants argue that these claims require a pick and place machine that secures optical components to the benches by solder bonding and that Wolfgang, in contrast, teaches the use of laser welding (Brief, p. 4). But Appellants do not

address the Examiner's reasonable finding that the laser point welding apparatus of Wolfgang is capable of performing solder bonding because the laser point welding apparatus would be capable of providing the necessary heat to melt the solder (Answer, p. 11). Contrary to the assertions of Appellants (Reply Brief, p. 3), the Examiner's ultimate finding of anticipation is in conformance with the law: Once the Examiner provides a reasonable basis to believe that the prior art structure is capable of performing the function recited in the claim, the burden shifts to Appellants to show that, in fact, it does not possess the ability to perform the claimed function. *See Ludtke*, 441 F.2d at 663-64, 169 USPQ at 566-67. Appellants provide no such evidence.

With regard to claim 7, Appellants argue that this claim requires the use of a flip chip bonder which is not shown or suggested by the applied reference (Brief, p. 4). But the Examiner has found that Wolfgang can be used to bond flip chips (Answer, p. 12). It is the Examiner's position that "since the prior art structure is capable of performing the intended use, then it meets the claim." (Answer, p. 12). Again, the Examiner's position is in conformance with the law. *Ludtke*, 441 F.2d 660, 663-64, 169 USPQ 563, 566-67. Appellants provide no evidence indicating that the structure of Wolfgang does not have the capability of bonding flip chips.

The Examiner has established anticipation with respect to the subject matter of claims 1-8 and 17-20 which has not been sufficiently rebutted by Appellants.

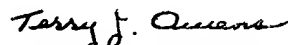


**CONCLUSION**


To summarize, the decision of the Examiner to reject claims 1-8 and 17-20 under 35 U.S.C. § 102(b) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

**AFFIRMED**

  
TERRY J. OWENS  
Administrative Patent Judge

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)  
) BOARD OF PATENT  
) APPEALS  
) AND  
) INTERFERENCES

  
CATHERINE TIMM  
Administrative Patent Judge

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CT/jrg

WARREN, *Administrative Patent Judge*, Dissenting:

I disagree with the decision of the majority of this panel to affirm the rejection of appealed claims 1 through 8 and 17 through 20 as being anticipated by Wolfgang under 35 U.S.C. § 102(b) and thus, decision of the examiner. I take this position for the following reasons.

The issues with respect to the claimed invention encompassed by independent claims 1 and 17 and dependent claims 2, 7 and 18, the claims considered by the panel in this appeal, involve the interpretation of certain italics emphasized language in the copy of these claims:

1. An optical system production line, comprising:
  - an optical bench supply that provides optical benches;
  - a component supply that provides optical components;
  - a pick-and-place machine that receives optical benches from the bench supply, picks optical components from the optical component supply, and *attaches the optical components to the optical benches*; and
  - optical system aligner that *characterizes the positions of the optical components, which have been attached to the optical benches, and mechanically adjusts the relative positions of the optical components*.
2. An optical system production line as claimed in claim 1, wherein the pick-and-place machine *secures* the optical components to the bench by *solder bonding*.
7. An optical system production line as claimed in claim 1, wherein the pick-and-place machine is a *flip-chip bonder*.
17. An optical system production line, comprising:
  - an optical bench supply for providing optical benches;
  - a component supply for providing optical components;
  - a pick-and-place machine for receiving optical benches from the bench supply, and for picking optical components from the optical component supply, and for *attaching the optical components to the optical benches*; and
  - means for characterizing the positions of the optical components attached to the optical*

*benches and for mechanically adjusting the relative positions of the optical components attached to the benches.*

18. An optical system production line as claimed in claim 17, further comprising the pick-and-place machine *securing* the optical components to the bench by *solder bonding*.

The divergent views of the examiner and appellants with respect to the claim interpretation issues are apparent from arguments in these respects as well as from arguments with respect to the application of Wolfgang to these claims. It is apparent from the statement of the rejection (answer, pages 3-4) that the examiner does not take into consideration the requirements that the optical components must be attached to the optical bench by a pick-and-place machine before a system component capable of functioning as an “optical system aligner,” in claim 1, or providing the “means for” such functioning, in claim 17, performs the steps in each claim of (1) characterizing the positions of the optical components attached to the optical bench and (2) mechanically adjusting the relative positions of the attached optical components to each other. The examiner also does not take into consideration that in claims 2 and 18, the pick-and-place machine must attach the optical components to the optical bench by securing through solder bonding. According to the stated reasons in support of the ground of rejection, the examiner merely finds with respect to claims 1 and 17, that the optical system production line of Wolfgang has a pick-and-place machine “that places the components to the work area” and an “aligner that characterizes the positions of the components on the bench and mechanically adjusts the relative positions . . . [of] the components” with “a two jaw gripper (Figure 9a, gripper);” finds no distinction with respect to claims 2 and 18; makes no separate finding with respect to claim 7; and with respect to all of these claims, takes the “position that how the system operates is a process limitation that holds little patentable weight in an apparatus claim” (id., page 4; emphasis supplied).

Appellants submit that with respect to claim 1, the system disclosed in Wolfgang positions the Universal Tripod Holder (UTH) and then attaches the UTH to the optical bench, and thus “does not show a system that includes this subsequent aligner system, providing the

function of adjusting the mechanical components that have been attached to the optical bench” (brief, pages 3-4). Appellants further submit with respect to claim 17, that “[n]o *prima facie* equivalency exists between [the “means for”] element and the system disclosed in [Wolfgang]” because “[Wolfgang] does not show something which characterizes positions of optical components that have already been attached to the optical benches” (*id.*, page 4). Appellants further point out that while claims 2 and 18 require soldering, Wolfgang “teaches the use of laser welding;” and that “[c]laim 7 requires the use of a flip chip bonder, which is not shown or suggested by [Wolfgang]” (*id.*). In these respects, appellants contend that the examiner has refused to give weight to the claim limitations, including the “‘means’ clause of claim 17,” and that the claims do “not include process limitations,” instead describing “such components as a system aligner, according to their function and operation” (*id.*, pages 4-5).

The examiner agrees with appellants’ view of Wolfgang (answer, page 4), but responds that Wolfgang teaches “the ‘attached to the optical benches’ claim limitation when they teach simultaneously pressing and rotating the [UTH] onto the mounting plate in order to ensure good position stability via the optical sensing system,” because the claims “must be ‘given the broadest reasonable interpretation consistent with the specification’” (answer, page 5). The examiner finds, with respect to claim 1, that “[a]ppellants have not defined the term ‘attached’ in the specification,” and while the “specification discusses an optical aligner that adjusts the optical component after it has been welded ([a]ppellants’ specification, pages 25-26), this teaching is not enough to limit the term ‘attached’ to mean ‘welded,’” and in the absence of a definition in the specification, “it is the examiner’s position that one of ordinary skill in the art would give a broader interpretation to the term and construe it to mean ‘be in contact with’ as defined by the American Heritage Dictionary, Fourth Edition” (*id.*, page 6). The examiner thus points out that in Wolfgang, the “optical sensing system” characterizes the position of the optical components “which are in contact with the optical benches (the ‘attachment’ occurring when the [UTH] is pressed into the mounting plate . . . ), and mechanically adjusts the relative positions of the

optical components (the adjustment occurring when the [UTH] and mounting plate rotated to ensure good position stability” (*id.*, pages 4-5).

The examiner finds that the last clause of claim 17 is in means-plus-function language satisfying the requirements of 35 U.S.C. § 112, sixth paragraph, but does not establish the “corresponding structure” covered by this claim language in the specification (*see* answer, page 7), relying instead on the terms in the clause to contend that there is “a prima facie case of equivalency” between both (1) “the ‘means for characterizing’ claim limitation” (*id.*, pages 8-9) and (2) “the ‘means for . . . mechanically adjusting’ claim limitation” (*id.*, pages 9-11) and the apparatus of the system of Wolfgang. “[W]ith respect to the ‘means for characterizing’ claim limitation, the examiner finds that the prior art performs the same function as [a]ppellants [*sic*, appellants’] invention, namely welding optical components onto an optical bench” (*id.*, page 8). The examiner further finds that while appellants’ “invention . . . operates after bonding” and Wolfgang “operates before bonding” in using a laser and a laser detector to determine alignment, and thus do “not function in exactly the same way,” the “two systems still meet the test for equivalence under 35 U.S.C. 112, sixth paragraph as they both still function in substantially the same way,” setting forth the “position that merely because [a]ppellants’ system operates after the bonding step while [the Wolfgang] system operates prior to bonding step does not overcome the substantial similarities of the two systems function, namely using a laser and corresponding laser detector to determine when an optical component is aligned on an optical bench,” citing the specification at page 19, fourth paragraph, and page 26, first paragraph (answer, pages 8-9). Finally, “the examiner finds that the characterizing system of Wolfgang produces substantially the same result as the characterizing system in the instant case, namely the sub-micron alignment of the optical components to the optical bench” (*id.*, page 9).

“With respect to the ‘means for . . . mechanically adjusting’ claim limitation the examiner finds that the prior art performs the same function as [a]ppellants [*sic*, appellants’] invention, namely arranging a component onto an optical bench” (*id.*). The examiner further finds that

“[a]ppellants’ invention using jaws that grasp the alignment structure, after it has been bonded to the bench, and manipulates it until an optical laser signal is maximized,” citing the specification at page 19, fourth paragraph, and page 26, first paragraph, and that Wolfgang uses “jaws that grasp the alignment structure, prior to bonding, and manipulates it until the laser signal is maximized and then maintains its grasp during welding,” concluding that “[w]hile it is true that the adjusting system of [Wolfgang] does not function in exactly the same way as the system of [a]ppellants, the examiner finds that the two systems still meet the test for equivalence under 35 U.S.C. 112, sixth paragraph [*sic*] they still function in substantially the same way,” setting forth the “position that merely because [a]ppellants’ system operates after the bonding step while [the Wolfgang] system operates prior to and during the bonding step does not overcome the substantial similarities of the two systems function, namely using a gripper to compensate for the misalignment of the optical systems,” citing the specification at page 26, first paragraph (answer, pages 9-10). Finally, “the examiner finds that the system of Wolfgang produces substantially the same result as the system of [a]ppellants, namely the sub-micron alignment of the optical components to the optical bench” (*id.*, pages 10-11).

With respect to claims 2 and 18, “[t]he examiner agrees that [Wolfgang] does not explicitly recite solder bonding,” but takes the “position that the intended use of solder bonding does not result in a structural difference between the claimed invention and the prior art as the laser of [Wolfgang] can be used to bond the optical component to the bench by providing the necessary heat or energy required to melt the solder . . . [and] that since the prior art structure is capable of performing the intended use, then it meets the claim” (*id.*, pages 11-12).

With respect to claim 7, “[t]he examiner agrees that [Wolfgang] does not explicitly recite that the ‘pick and place machine is a flip-chip machine,’ but takes the “position that the intended use of a flip chip bonder does not result in a structural difference between the claimed invention and the prior art as the gripper of [Wolfgang] can be used to bond flip chips (compare [Wolfgang] figure 3, mini-gripper and section 5, ll. 5-7 to [a]ppellants’ specification Figure 26,

items 710a and 710b) . . . [and] that since the prior art structure is capable of performing the intended use, then it meets the claim” (answer, pages 12-13).

Appellants reply that it is their “best information . . . that the American Heritage® Dictionary, Fourth Edition, does not contain” the definition “to be in contact with” attributed to the term “attached” by the examiner (reply brief, pages 1-2; answer, page 6). Appellants recite “the definition of ‘attach’ and the verb form ‘attached’ from” this dictionary, and contend that the definition is consistent with [a]pplicants’ use of the term ‘attached’ and its variants in the present specification” (reply brief, page 2). Appellants contend that the examiner admits at page 10 of the answer, that the system of Wolfgang does not function in exactly the same way as the system claimed in claim 17, pointing out that “claim 17 requires an alignment system that ‘operates after bonding’” (reply brief, pages 2-3). Appellants argue with respect to claim 2, that the examiner’s finding of anticipation because the laser of Wolfgang “is hot enough to melt solder” at page 11 of the answer, amounts to “an extension of anticipation when one could imagine how the prior art could be modified or controlled to perform the functions of the claimed invention” (reply brief, page 3). Appellants finally contend with respect to claim 7 that a “flip-chip bonder” is a specific device limitation (id., page 4).

In order to consider the examiner’s application of Wolfgang to claims 1, 2, 7, 17 and 18, the language thereof must be interpreted by giving the claim terms their broadest reasonable interpretation consistent with the written description provided in appellants’ specification as it would be interpreted by one of ordinary skill in this art, without reading into these claims any limitation or particular embodiment which is disclosed in the specification. *See In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997) (“[T]he PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.”); *In re Donaldson Co.*, 16 F.3d 1189,

1192-95, 29 USPQ2d 1845, 1848-50 (fed. Cir. 1994) (*in banc*) (“[T]he ‘broadest reasonable interpretation’ that an examiner may give means-plus-function language is that statutorily mandated in [35 U.S.C. § 112,] paragraph six,” and in this respect, the examiner should not confuse “impermissibly imputing limitations from the specification into a claim with properly referring to the specification to determine the meaning of a particular word or phrase in a claim. [Citation omitted.]”); *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (“During patent prosecution the pending claims must be interpreted as broadly as their terms reasonably allow. When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning, in order to achieve a complete exploration of the applicant’s invention and its relation to the prior art. *See In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).”).

In considering the subject language of independent claim 1 in light of the positions of appellants and the examiner, I am of the view that as specified by the limitations of this claim, the pick-and-place machine must be capable of attaching the optical components to the optical bench, and the optical system aligner must be capable of aligning the optical components attached to the optical bench, that is, the optical system aligner must mechanically adjust the positions of the attached optical components relative to each other and to the optical bench until the components are characterized by the optically system aligner as being in alignment. In other words, the position of the optical component *on* the bench does *not* change *per se* after attachment but the attached components *per se* are mechanically manipulated into alignment relative to the bench in aligning the attached components to each other. Therefore, the pick-and-place machine must be capable of attaching the optical components to the optical bench sufficiently to permit the mechanical adjustments by the optical system aligner, which latter system production line component must be capable of manipulating the attached components into alignment relative to each other.



I am not persuaded otherwise by the examiner's argument that the broadest reasonable construction of the terms "attaches" and "attached" is "be in contact with," stated to be a dictionary definition, in view of appellants' evidence that the dictionary cited by the examiner does not contain such meaning. Indeed, contrary to the examiner's definition, which connotes in context an unsecured touching of a surface, the definition of "attach" in context provided by said dictionary is "1. To fasten, secure, or join," which definition comports with that found in other common dictionaries by different publishers. *See generally, Webster's Third New International Dictionary* 140 (Phillip Babcock Gove, ed., Springfield, Massachusetts, Merriam-Webster Inc. 1993); *Webster's II New Riverside University Dictionary* 136 (Boston, The Riverside Publishing Company. 1988); *The American Heritage Dictionary, Second College Edition* 139 (Boston, Houghton Mifflin Company, 1982). Thus, I find that one of ordinary skill in this art would have considered the terms "attaches" and "attached" in context to have the ordinary and common dictionary meaning of fasten so as to secure, particular since there is no disclosure in appellants' specification which rebuts the ordinary and common meaning, as appellants point out. *See generally, Texas Digital Systems, Inc. v. Telegenx Inc.*, 308 F.3d 1193, 1208, 64 USPQ2d 1812, 1817-20 (Fed. Cir 2002); *In re Paulsen*, 30 F.3d 1475, 1479, 31 USPQ2d 1671, 1674 (Fed. Cir. 1994).

With respect to the means-plus-function limitation in the last clause of independent claim 17, there is no dispute that § 112, sixth paragraph applies. *See Texas Digital Systems*, 308 F.3d at 1208, 64 USPQ2d at 1822-23, and cases cited therein. Thus, the "means" language must be interpreted as limited to the "corresponding structure" disclosed in the written description in the specification to perform the specified "function" and the "equivalents" thereof. *Donaldson*, 16 F.3d at 1195, 29 USPQ2d at 1850. The "corresponding structure" is that "structure in the written description necessary to perform that function [citation omitted]," that is, "'the specification . . . clearly links or associates that structure to the function recited in the claims.' [Citation omitted.]" *Texas Digital Systems*, 308 F.3d at 1208, 64 USPQ2d at 1822-23. "[A] section 112, paragraph 6

‘equivalent[]’ . . . [must] (1) perform the identical function and (2) be otherwise insubstantially different with respect to structure. [Citations omitted.]” *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1364, 54 USPQ2d 1308, 1315-16 (Fed. Cir. 2000). “[T]wo structures may be ‘equivalent’ for purposes of section 112, paragraph 6 if they perform the identical function in substantially the same way, with substantially the same result. [Citation omitted.]” *Kemco Sales*, 208 F.3d at 1364, 54 USPQ2d at 1315. “[T]he ‘broadest reasonable interpretation’ that an examiner may give means-plus-function language is that statutorily mandated in paragraph six.” *Donaldson*, 16 F.3d at 1195, 29 USPQ2d at 1850; *see also Morris*, 127 F.3d at 1055-56, 44 USPQ2d at 1028 (explaining *Donaldson*).

Thus, in order to determine the broadest reasonable interpretation that can be made of the means-plus-function limitation in claim 17, the examiner must first determine the “corresponding structure” to the “function” in the limitation that is described in the specification and then the “equivalents” thereof can be determined. I find, in this respect, that the examiner has not in fact established the “corresponding structure” in the specification for the “function” specified by the limitation but merely points to the fourth paragraph of page 19 and the first paragraph of page 26 of the specification in discussing the “equivalence” between the alleged structure of the means-plus-function limitation of claim 17 and the structure of the optical system production line of Wolfgang.

I find that the structure described in the fourth paragraph of page 19 of the specification involves “step 650” of the “process diagram illustrating the optical system active alignment process” in specification **Fig. 20** with reference to numerals in the “perspective drawing of a laser optical signal source that couples a beam into an optical fiber held by mounting and alignment structure” in **Fig. 19** (page 6, second and third paragraphs; page 18, second full paragraph, to page-19, fourth paragraph). In step 650, “a pick-and-place and bonding process” is performed by “a pick-and-place robot . . . using passive alignment” of a “mounting and aligning structure 100” on “laser bench 10” prior to attaching the mounting and aligning structure 100, which is used to

form an optical component in step **652**, to bench **10** by bonding. Thus, this language is a description of only the “pick-and-place machine” specified in claim 17.

Indeed, language referring to the “function” of the subject limitation of claim 17 with respect to the process diagramed in **Fig. 20** does not appear until the second paragraph of page 20:

In step **664**, the alignment system grasps or engages the mounting and alignment structure **100** to deform the mounting and alignment structure **100** in response to a strength or magnitude of a signal transmitted by the fiber **f** from the laser **612**.

The first paragraph of page 25 of the specification is in fact the paragraph bridging pages 24-25 and refers to **Fig. 26** which “schematically illustrates the manufacturing sequence for optical systems according to the principles of the present invention” (page 24, last full sentence; *see also* page 6, ninth paragraph):

In the preferred embodiment, the optical benches, with the alignment structure affixed thereto are then fed to an alignment system. This alignment system **2020** has the jaws **710A**, **710B** which grasp the handles of the alignment structure **100** to effect alignment. In the preferred embodiment, this alignment is active alignment in which the magnitude of the optical signal **2022** is detected by a detector **2024**. The alignment structure **100** is manipulated and deformed until the optical signal **2022**, detected by the detector **2024**, is maximized. Alignment search strategies such are [sic] a hill-climbing approach or spiral scan approach are preferably utilized. [Pages 24-25, bridging paragraph.]

I note that the examiner also refers to page 2, fourth full paragraph, and to page 3, third full paragraph, of the specification. The fourth paragraph of page 2 describes “two general classes of alignment strategies: active and passive,” wherein the “passive alignment” involves aligning registration or alignment features of the optical component carriers with such features on a platform, mounting the optical components on the carriers, and then bonding the carriers to the platform. In the “active alignment,” the alignment is based on the detected signal transmitted by the optical components. The third paragraph of page 3 states that the disclosed “optical system

production system . . . utilizes passive placement of the optical components on a optical bench followed by a preferably fast active alignment process.”

I further find that the following two disclosures are also pertinent to the issue here:

In the preferred embodiment, the pick-and-place machine secures the optical components to the bench by solder bonding. In the current implementation, the pick and place machine is a flip-chip bonder. Further, the optical system aligner characterizes the positions of the optical components by activating an optical link of the optical system, detecting an optical signal after interaction with at least some of the optical components, and adjusting the optical components to optimize transmission of the optical signal over the link. The alignment system preferably comprises two jaws for engaging a mounting structure supporting the optical component and moving the structure relative to the bench. [Page 3, last paragraph.]

**Fig. 21**[, a perspective top view showing the jaws of an aligner engaging the handle of a mounting and alignment structure to deform the structure during an alignment process,] illustrates the engagement between the alignment system and the mounting and alignment structure **100** to align the fiber **f**. Specifically, the two jaws **710A**, **710B** engage the handles **136** of the mounting and alignment structure **100** and then move the mounting and alignment structure to displace the fiber **f** in an x-y plane, which is orthogonal to the axis of the fiber **f**. Simultaneously, the magnitude of the signal transmitted by the fiber is monitored until a maximum signal is detected in step **666** of **Fig. 20**. Of note is the fact that the right and left cut-outs of the handle **136** enable the jaws of alignment system to both pull and push the structure away and toward the bench **10**, as needed to achieve an optimal alignment. [Page 6, fourth paragraph; page 20, third paragraph.]

It is thus apparent that the “function” of the means-plus-function limitation in claim 17 is not the functions, separately or several, stated by the examiner for each of the sub-functions evident in the claim language in applying Wolfgang, but in fact is the adjustment of each of the optical component attached to the optical benches by mechanically adjusting the relative positions thereof based on the characterization of those positions. The “corresponding structure” for this “function” evident from the written description in the specification as illustrated above, is of two jaws that grasp the mounting and alignment structure, that is, the carrier, for optical components, such as an optical fiber, attached by bonding to an optical bench by a pick-and-place

machine, to effect alignment of the attached carrier by manipulation thereof, including deformation, in accordance with optical signals generated by the optical components detected by a detector and used to characterize the position of the optical components. Whether a prior art structure is an “equivalents” to this “corresponding structure” for the claimed “function” would, of course, depend on a determination that the “corresponding structure” here identified and the prior art structure perform the identical “function” in substantially the same way, with substantially the same result.

With respect to dependent claims 2, 7 and 18, in addition to the limitations of the claims on which these claims are dependent, I find from the plain language thereof that the pick-and-place machines of claims 2 and 18 must be capable of securing optical components to the optical bench by solder bonding, and the pick-and-place machine of claim 7 must be one having the capabilities of a “flip-chip bonder.”

Turning now to the application of Wolfgang to claims 1, 2, 7, 17 and 18 under § 102(b), it is well settled that in order for the examiner to establish a *prima facie* case of anticipation, each and every element of the claimed invention, arranged as required by the claim, must be found in a single prior art reference, either expressly or under the principles of inherency, in a manner sufficient to have placed a person of ordinary skill in the art in possession thereof. *See generally, In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997); *Paulsen*, 30 F.3d at 1478, 31 USPQ2d at 1673; *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 677-78, 7 USPQ 1315, 1317 (Fed. Cir. 1988); *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick*, 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984).

I am of the opinion that the examiner’s finding of a *prima facie* case of anticipation of the claimed optical system production line encompassed by the appealed claims is not supported by substantial evidence in the record.

Upon comparing the claimed claims 1, 2, 7, 17 and 18 as I have interpreted these claims above, with the optical system production line disclosed by Wolfgang, I find, as a matter of fact,

that Wolfgang discloses that the second robot of the two robot robotized assembly cell has “[a] new miniature pneumatic gripper . . . that allows for a very rigid and accurate gripping of the optical elements” and thus, “[w]ith slow and small displacements, . . . is able to make very accurate final positioning of each element” “in order to allow an easy integration of the three laser welding heads” in attaching the three legs of the UTH carrying the optical element to the mounting plate, the UTH carrying the optical element having been positioned on the mounting plate by a vertical and horizontal scanning procedure prior to attachment by laser welding which is done “when the optimal position and orientation of the optical element has been reached” (“5. The Robotized Assembly Cell” and **Figs. 6 through 9a**, pages 165 through 167). The movement and positioning of the UTH carrying the optical element by the second robot involves vertical and perpendicular rotational movement of the UTH with respect to the mounting plate while the mounting plate is moved horizontal and rotated horizontally, which results in an immobile mechanical contact point between the UTH’s feet and the mounting plate (page 166, first paragraph, and **Fig. 7**). Wolfgang provides the following description of the UTH and the positioning process:

Because of this mechanical compliance of the legs, [that is, having resolute flexure hinges so they can bend or spring back in their original position if the elastic limit of the metal has not been reached,] the frame [of the UTH] can be actively positioned in 6 DOF[, that is, degrees of freedom,] while each foot (spherical hinge) will slip passively on the mounting plate keeping in contact with it. But when the three feet are simultaneously attached to the mounting plate, the frame is definitively immobilized in all DOF. [Page 163, fourth paragraph.]

I fail to find in Wolfgang any evidence or inference which one skilled in this art can draw therefrom, *see In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968), which establishes as a matter of fact that the “new miniature pneumatic gripper” of the second robot would have the capability to mechanically adjust the relative positions of optical components which have been attached to the optical bench as required of the optical system aligner in claim 1; and would be an equivalent of the two-jaw structure in appellants’ specification that

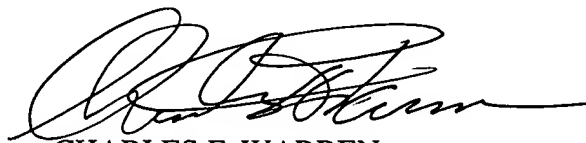
corresponds to the mean-plus-function language in claim 17 because the function of adjusting of each of the optical component attached to the optical benches by mechanically adjusting the relative positions thereof based on the characterization of the positions encompassed by that claim language is *not* the same function served by the second robot of Wolfgang. *Cf. Donaldson*, 16 F.3d at 1195-97, 29 USPQ2d at 1850-52. Indeed, the “new miniature pneumatic gripper” of the second robot merely “allows for a very rigid and accurate gripping of the optical elements” and is used “[w]ith slow and small displacements. . . to make very accurate final positioning of each element” that involves positioning the UTH carrying the optical element prior to rigidly attaching the same to the mounting plate by laser welding, at which point the optical element loses all degrees of freedom of movement and the gripper is withdrawn from the optical element.

Thus, Wolfgang fails to describe the claimed invention encompassed by claims 1 and 17 within the meaning of § 102(b) because it does not describe each and every element arranged as required by these claims as interpreted above. Furthermore, the same finding pertains to claims 2, 7 and 18 which do not limit the requirements of the last clause of claims 1 and 17 on which they depend and thus, are also not described within the meaning of § 102(b).

Even if it is held that claims 1 and 17 are anticipated by Wolfgang, there is no evidence in the record establishing that in fact the apparatus of Wolfgang has the capability to solder rather than weld the UTH to the mounting plate or that the first robot of the robotized assembly cell in fact has the same capability as a flip-chip bonder, and thus there is no description of the claimed invention encompassed by claims 2, 7 and 18 in Wolfgang within the meaning of § 102(b). As to claims 2 and 18, the notion that the laser welding devices can provide heat which, of course, is recognized as necessary to a soldering operation, does not establish that one skilled in the art would have inferred a soldering capability based on the presence of a source of heat alone because there is no disclosure in Wolfgang that the legs of the UTH can be suitably attached to the mounting plate by any means other than laser welding, and there is no structure in the apparatus of the reference which provides for the application of solder materials to effect

attachment. With respect to claim 7, the examiner has not explained why one skilled in the art would consider jaws 710A and 710B of appellants' optical system aligner to have the capabilities of a pick-and-place machine which specifically is a flip-chip bonder. Indeed, at best, these facts raise issues of obviousness under 35 U.S.C. § 103(a), not issues of anticipation under § 102(b).

Accordingly, I would reverse the sole ground of rejection advanced on appeal and thus the decision of the examiner.



CHARLES F. WARREN  
Administrative Patent Judge

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